

Amendment/Reply

Applicant: Norman C. Chou et al.

Serial No.: 10/057,159

Filed: January 24, 2002

Docket No.: 10011314-1/A610.258.101

Title: CONTROL OF AUTHENTICATION DATA RESIDING IN A NETWORK DEVICE

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Please amend claims 1, 3, 8, 12, 15-16, 22-23, 26-27, 33, and 34 as follows:

1. (Currently Amended) A system to support management operations associated with an interconnect device, the system comprising:

a configuration switch configured to receive an operator command to reset authentication data ~~that having~~ associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data facilitates authorization of the management operations from an operator, and configured to generate a reset signal in response to the operator command; and

a port of the interconnect device coupled to the configuration switch, the port configured to maintain the authentication data and to reset the authentication data upon receiving the reset signal from the configuration switch.

2. (Previously Presented) The system of claim 1 wherein the port is configured to store the authenticated data together with a set of associated attributes.

3. (Currently Amended) The system of claim 2 wherein:

the port is a management port;

the authentication data is a management key; and

the set of associated attributes includes a protection attribute specifying a level of protection required for performing a particular management operation and ~~an~~ the expiration attribute controlling expiration of the management key.

4. (Previously Presented) The system of claim 3 further comprising:

a sub-network (subnet) manager coupled to the interconnect device, the subnet manager configured to store a copy of the management key and to include the management key into a Subnet Management Packet (SMP) sent to the management port for a comparison with the management key stored in the management port.

5. (Original) The system of claim 3 wherein the management port comprises:

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an initialization module to store the authentication data;
a decoder to store a first copy of the authentication data;
a management agent to store a second copy of the authentication data; and
a processor subsystem interface to provide access to a storage device that stores a third copy of the authentication data.

6. (Previously Presented) The system of claim 5 wherein the decoder is configured to receive the reset signal from the configuration switch.

7. (Previously Presented) The system of claim 6 wherein the decoder is configured to communicate the reset signal to any one of the initialization module, the management agent and the configuration interface.

8. (Currently Amended) A method to support management operations associated with an interconnect device, the method comprising:

receiving a reset signal from a configuration switch at a decoder of a management port, the reset signal indicating that an operator requested a reset of an authentication data that having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data facilitates authorization of the management operations; and

resetting a copy of the authentication data, wherein the authentication data is stored in the decoder in response to the reset signal.

9. (Original) The method of claim 8 further comprising:

receiving a management packet from a sub-network (subnet) manager with an update value for the authentication data; and

setting the copy of the authentication data stored in the decoder to the update value.

10. (Original) The method of claim 8 further comprising:

the decoder communicating the reset signal to any one of an initialization module, a management agent and a processor subsystem interface; and

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resetting a corresponding copy of the authentication data upon receiving the reset signal at any one of the initialization module, the management agent and the processor subsystem interface.

11. (Original) The method of claim 8 wherein the authentication data is a management key.

12. (Currently Amended) A method to support management operations associated with an interconnect device, the method comprising:

detecting that a reset is required of authentication data having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data resides in a management port of the interconnect device is required;

informing an operator that the reset is required;

refraining from sending subnet management packets (SMPs) to the management port upon detecting that the reset is required;

receiving a message from the operator that indicates that the authentication data has been reset; and

subsequent to the receipt of the message, sending to the management port an update SMP with a request to set authentication data residing in each unit of the interconnect device to an update value.

13. (Original) The method of claim 12 wherein:
the SMPs are virtual lane 15 (VL 15) packets; and
the authentication data is a management key.

14. (Original) The method of claim 12 wherein:
each SMP sent to the management port includes authentication data that matches authentication data residing in a decoder of the management port unless the authentication data residing in the decoder is set to a predetermined value.

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15. (Currently Amended) The method of claim 12 wherein the authentication data is stored in the management port with a set of associated attributes, the set of associated attributes including a protection attribute specifying a level of protection required for performing a particular management operation and ~~an~~ the expiration attribute controlling expiration of the authentication data.

16. (Original) The method of claim 15 wherein detecting that the reset is required comprises:

sending a SMP containing a copy of the authentication data maintained by the subnet manager to the management port; and

receiving a trap indicating that the management port has invalidated the SMP due to a mismatch between the authentication data included the SMP and the authentication data maintained by the management port and further indicating that the expiration attribute is set to ~~at~~ the value that providing for indefinite duration of the authentication data and thereby ~~prevents~~ ing expiration of the authentication data.

17. (Original) The method of claim 15 wherein detecting that the reset is required comprises:

sending an initial SMP containing a copy of the authentication data maintained by the subnet manager to the management port;

determining that a response to the initial SMP has not been received from the management port for a predefined time period;

re-sending the initial SMP for a predetermined number of times without receiving a response; and

determining that the failure to receive the response may be caused by a mismatch between the authentication data included in the initial SMP and the authentication data maintained by the management port.

18. (Original) The method of claim 12 wherein the update value is the value of authentication data stored in a database of the subnet manager.

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19. (Previously Presented) The method of claim 12 wherein the management port stores multiple copies of the authentication data; and

only one copy from the multiple copies has been reset in response to the operator command.

20. (Previously Presented) The method of claim 19 further comprising:
determining the update value for the update SMP.

21. (Original) The method of claim 20 wherein determining the update value comprises:
upon receiving the message indicating that the authentication data maintained by the management port has been reset, sending to the management port a read SMP requesting a current value of the authentication data maintained by the management port;

receiving the current value of the authentication data maintained by the management port from the management port;

designating the received value as the update value; and

updating authentication data in a database of the subnet manager with the received value.

22. (Currently Amended) An apparatus to support management operations associated with an interconnect device, the apparatus comprising:

means for detecting that a reset is required of authentication data having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data resides in a management port of the interconnect device ~~is required~~;

means for informing an operator that the reset is required;

means for refraining from sending subnet management packets (SMPs) to the management port upon detecting that the reset is required;

means for receiving a message from the operator that indicates that the authentication data has been reset; and

means for sending to the management port an update SMP with a request to set authentication data residing in each unit of the interconnect device to an update value.

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23. (Currently Amended) A system comprising:

an interconnect device to maintain authentication data in a plurality of units, the authentication data facilitating management operations associated with the interconnect device;

a configuration switch coupled to the interconnect device, the configuration switch configured to reset authentication data having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data resides in a management port of the interconnect device; and

a sub-network (subnet) manager coupled to the interconnect device, the subnet manager configured to detect that the reset of authentication data residing in the management port is required, to inform an operator that the authentication data has been reset, and to send to the management port an update data packet with a request to set the authentication data residing in each of the plurality of units of the interconnect device to an update value.

24. (Previously Presented) The apparatus of claim 22 wherein the SMPs are virtual lane 15 (VL 15) packets, and the authentication data is a management key.

25. (Previously Presented) The apparatus of claim 22 wherein each SMP sent to the management port includes authentication data that matches authentication data residing in a decoder of the management port unless the authentication data residing in the decoder is set to a predetermined value.

26. (Currently Amended) The apparatus of claim 22 wherein the authentication data is stored in the management port with a set of associated attributes, the set of associated attributes including a protection attribute specifying a level of protection required for performing a particular management operation and ~~an~~ the expiration attribute controlling expiration of the authentication data.

27. (Previously Presented) The system of claim 23 wherein the subnet manager is configured to detect that the reset is required by sending a subnet manager packet (SMP)

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containing a copy of the authentication data maintained by the subnet manager to the management port, and receiving a trap indicating that the management port has invalidated the SMP due to a mismatch between the authentication data included the SMP and the authentication data maintained by the management port and further indicating that the expiration attribute is set to ~~at the value that~~ providing for indefinite duration of the authentication data and thereby preventing expiration of the authentication data.

28. (Previously Presented) The system of claim 23 wherein the subnet manager is configured to detect that the reset is required by sending an initial subnet management packet (SMP) containing a copy of the authentication data maintained by the subnet manager to the management port, determining that a response to the initial SMP has not been received from the management port for a predefined time period, re-sending the initial SMP for a predetermined number of times without receiving a response, and determining that the failure to receive the response may be caused by a mismatch between the authentication data included in the initial SMP and the authentication data maintained by the management port.

29. (Previously Presented) The system of claim 23 wherein the update value is the value of authentication data stored in a database of the subnet manager.

30. (Previously Presented) The system of claim 23 wherein the management port stores multiple copies of the authentication data, and only one copy from the multiple copies has been reset in response to the operator command.

31. (Previously Presented) The system of claim 30 wherein the subnet manager is configured to determine the update value for the authentication data.

32. (Previously Presented) The system of claim 31 wherein the subnet manager is configured to determine the update value by sending to the management port a read SMP requesting a current value of the authentication data maintained by the management port upon receiving a message indicating that the authentication data maintained by the management port has been reset, to receive the current value of the authentication data

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maintained by the management port from the management port, to designate the received value as the update value, and to update authentication data in a database of the subnet manager with the received value.

33. (Currently Amended) A machine-readable medium storing a description of a circuit comprising:

a decoder configured to reset, based on a reset signal received from a configuration switch, an authentication data having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data is stored in the decoder based on a reset signal received from a configuration switch, and the decoder is configured to receive a management packet from the sub-network (subnet) manager with an update value for the authentication data residing in a plurality of units of an interconnect device; and

a subnet management agent configured to receive the management packet from the decoder and to control the update of the authentication data residing in each of the plurality of units.

34. (Currently Amended) A computer readable storage medium storing executable instructions which when executed on a processing system cause said process system to perform a method comprising:

detecting that a reset is required of authentication data having associated thereto an expiration attribute set to a value providing for indefinite duration of the authentication data, wherein the authentication data resides in a management port of the interconnect device is required;

informing an operator that the reset is required;

refraining from sending subnet management packets (SMPs) to the management port upon detecting that the reset is required;

receiving a message from the operator that indicates that the authentication data has been reset; and

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subsequent to the receipt of the message, sending to the management port an update SMP with a request to set authentication data residing in each unit of the interconnect device to an update value.